REPORT

ON THE

CLIMATOLOGY AND EPIDEMICS OF MINNESOTA.

BY

CHARLES N. HEWITT, M.D.,

RED WING, MINNESOTA.

EXTRACTED FROM THE

TRANSACTIONS OF THE AMERICAN MEDICAL ASSOCIATION.

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In collecting data for this, my second annual report, the same plan as was followed last year has been adopted.

The increased interest felt on these subjects by the profession throughout the State, since they have been made the occasion of special reports to the National and State Associations, has resulted in a greater variety of data than before.

For many reasons, no statistics as to climate are ready for presentation. Some from St. Paul are in my possession, by the courtesy of Dr. D. W. Hand, of that city, but are delayed till others are obtained, which, tabulated with them, will secure a more complete record.

In a new country like ours, instruments and methods of precision are but little used, except when necessary for immediate practical results. This is as true of medicine as of any other art, but I think I may claim for my brethren here, that they are rapidly working their way to the use of every means which can facilitate their work or advance their knowledge, and that but a short time will elapse before thorough climatic and other observations will be the rule.

The report on diseases presents two unusual features—an extensive operation of paludal poison; and the occurrence of an epidemic of cerebro-spinal meningitis in some of our towns, and its threatened spread to other parts of the State.

Dr. B. R. Palmer, of Sauk Centre, has at my request written briefly his experience for this season of this dreaded disease, and Dr. W. W. Sweney, of Red Wing, gives, from ample experience, an account of the epidemic of 1864 in Red Wing.

I append these papers to this report, not as necessary to the history of disease, which it is my duty to secure, but as fair

examples of the observation and study brought to bear on diseases among us. I beg leave to refer to my last report for many details as to diseases prevailing before the epidemic described by Dr. Sweney, unnecessary for that reason to be written here.

I am happy to be able to report the organization of a State Board of Health, by the Legislature of Minnesota, in accordance with the request of this Association, expressed at its last meeting. The Board have already begun their work, encouraged by the cordial co-operation of the entire profession of the State.

ENTERIC FEVER.—Less frequent and less severe than last year.

Epidemic: "At St. Paul, during September, October, November, and December, 1871, and January, 1872, confined to no locality, and has been as common on the bluffs back of the city as in the more crowded neighborhoods near the river. In some houses there, four or five cases have occurred, but in no instance have I been able to settle definitely upon any particular local cause." (Dr. W. Hand.)

At Stillwater, on the St. Croix, 23 cases are reported in the practice of one physician (Dr. Reiner), 3 deaths; one from perforation of the bowels; two from intestinal hemorrhage. In other places, where the disease has hitherto been almost endemic, no cases are reported.

ENTERO-MALARIAL (typho-malarial).—Though not so general throughout the State, this variety of fever has been more than usually common along the Mississippi River. At St. Cloud, on the upper river, Dr. Senkler reports 36 cases: 18 in February, March, and April; 12 in August, September, and November. "Paludal influence well marked. 15 cases occurred on the shores of a small muddy lake. The sporadic cases were the severest."

Average age, eighteen years. *Extremes of age*, two to fifty years. Children, 14; adults, 22.

Sex.—13 males, 23 females.

"The disease has prevailed in St. Paul and vicinity for eighteen months past, being more frequent during the epidemic of the pure type. It is distinguished from enteric by marked remissions, absence of diarrhœa, tenderness of abdomen, and delirium, and of the rose-colored spots and partial deafness." (Dr. D. W. Hand.)

At Stillwater, "forty-two cases occurred, with great gastric and hepatic disturbance, and disposition to relapse. Miasmatic exhalations are the prolific source, coming from low damp ground, vege-

table and animal debris, etc. They have told on our community at a fearful rate." (Dr. J. K. Reiner.)

"At Hastings, about twenty miles below St. Paul, on the Mississippi, an extensive prevalence and a disposition in ordinary remittent, to lapse into a low enteric form. Paludal influence operating with civic poison the cause." (Dr. C. P. Adams.)

At Red Wing, just above the head of Lake Pepin, less frequent than for years, sporadic and mild.

"At Wabasha, just below Lake Pepin, less of the disease than for twelve years." (Dr. Lincoln.)

At Winona, still lower down the river, 29 cases are reported: ages ten to sixty years. Sex, two thirds females. Deaths, 3; one at fourteen years, of cerebro-spinal meningitis, as a complication; one, aged twenty-five, abortion at five months, followed by coma; one, aged twenty-three, meningitis—all females.

Back from the river, on the prairies, the prevalence has, so far as I learn, been sporadic and unusually mild.

INTERMITTENT AND REMITTENT FEVER.—Shortly after the completion of the report for 1870, the operation of paludal poison as a disease cause began along the Mississippi, and during the year past made a record more marked than ever before since the white settlement. Beginning in the spring, it reached its maximum of influence in mid-summer, and shortly yielded after the coming on of cold.

No intermittent fever is reported in St. Cloud or St. Paul, but the presence of its peculiar cause was apparent in the production of the remittent and entero-malarial forms. The disease was endemic at Stillwater, Hastings, Red Wing (at least 600 cases in a population of 5000), Wabasha (half the population), and Winona. The most marked prevalence has been along the river. In the country twenty to thirty miles back, and along the smaller streams, there has been even less than usual, with the exception of Rochester, "where it was very marked, scarce any febrile attack in which malarial influence was not apparent." (Dr. H. Galloway.) The type has as a rule been tertian, and the attack severest at the outset of the epidemic, *e. g.*, on an island above Red Wing, around and near which we believe were the chief sources of the poison for the town, the first two cases died speedily of congestive chills. The liability to relapse was a characteristic feature of this epidemic. It occurred on the 7th, 14th, and 21st, and even as late as the 42d day. The period of freedom from relapse lengthened as

the season advanced. This malarial influence was felt all winter, and still acts in modifying the operation of other disease cause.

The causes assigned in my last report are all that occur to us as yet. They were intensified by the very low stage of the water, and by the extensive clearing of timber off the islands during the previous winter, thus exposing an unusual extent of the river bottom land to sunlight and air.

CEREBRO-SPINAL MENINGITIS.—At date of reports (December and January last), was sporadic in St. Paul, Stillwater, Wabasha, and Winona. It is now epidemic, I am informed, in Sauk Centre (a very interesting report by Dr. B. R. Palmer is attached), and in other places, and threatens to be so in St. Paul. (Dr. D. W. Hand.)

VARIOLA AND VARIOLOID were introduced into St. Paul from New York in November last. They gradually extended, till, at date of report (January), there had been 36 cases, nearly an equal number of the pure and modified form. Eight deaths are reported. Sporadic cases occurred in other towns, beginning with imported cases. Vaccination and revaccination have been general and successful. The popular belief that this fact is proof of an epidemic tendency to the disease has been of use in overcoming carelessness in opposition to the practice then too general, especially among a portion of the foreign population.

SCARLATINA.—Twice epidemic during the past year in St. Paul; very mild and few deaths. Also at Stillwater, where 22 cases are reported in Dr. Reiner's practice, none fatal.

In Red Wing it began in September, and still continues, at the same time with rubeola. There have been over 300 cases, and very few deaths; 3 deaths are reported from diphtheritic complication. Many cases have been mixed with rubeola, and Dr. Sweney reports 5 cases with varicella. In Pine Island, thirty miles back from the river, 30 cases, 22 mild, 8 severe. "Ages, majority under eight, two over eighteen. Most frequent sequel albuminuria. Deaths: two from purpura hemorrhagica." (Dr. C. Hill.) "At Zumbrota, ten miles nearer the Mississippi, no cases." (Dr. O. H. Hall.)

RUBEOLA.—None up to date of the reports, except at Red Wing and Stillwater. Now (April 27th) it, as well as scarlatina, is epidemic, very mild and rarely fatal. Its worst effects are on very young children, and on depraved diatheses, notably the strumous.

ERYSIPELAS.—Reported epidemic in St. Paul in November and December, 1871. It has reappeared there since, affecting surgical

wounds. It is sporadic elsewhere. In Rochester, fifty miles from the river, "its prevalence is reported greater than at any time since 1864." (Dr. H. Galloway.) At Winona, a few genuine cases are reported.

RHEUMATISM.—More cases of the acute variety are noted than last year. In St. Cloud, 4 cases; Red Wing, 8; Stillwater, 13; Zumbrota, 8 cases in July and August, most of them with cardiac complications, no deaths.

"In St. Paul there has been an unusual prevalence of the subacute muscular type, which is the form the disease in by far the greater number of cases assumes." (Dr. D. W. Hand.)

DYSENTERY.—Very slight and mild prevalence is reported, except at Zumbrota and Pine Island in Goodhue County. In Zumbrota, 36 cases in July and August. In Pine Island, 12 cases in August and September. No causes assigned.

CHOLERA INFANTUM.—No marked general prevalence. In Goodhue County, 13 cases and 2 deaths in Red Wing, 4 cases in Zumbrota.

DISEASES OF THE RESPIRATORY TRACT.—*Effect of climate in inducing diseases of the mucous membrane.* It may be stated as the opinion of the majority of the profession in the State, that the effect is to induce chronic catarrh and some of the non-contagious forms of ophthalmia. Dr. O. H. Hall, resident in a settlement of New England people, gives it as the result of his observation that a very large number of persons from those States who never had catarrh there, develop it here after a short residence. Drs. Lincoln, of Wabasha, and Sweney, of Red Wing, both long resident and careful observers, report a large amount of catarrh developed here which is persistent and obstinate.

Is the catarrh so induced limited to the nares and fauces?—The reply is in general, yes, except in tuberculous diathesis, or in persons suffering from other chronic diseases of the respiratory mucous membrane.

What temperament is most susceptible to its influence?—Not known. Dr. Lincoln, of Wabasha, thinks the lymphatic and strumous, especially among children, and I think this the opinion of the majority. Dr. Flagg, of St. Paul, says nervous and sanguine.

Effect of climate on imported catarrh, laryngitis, bronchitis, or asthma.—Dr. Staples, of Winona, expresses the general opinion as follows: "Favorable. Recovery much more likely to occur than in disease incurred here. There is considerable difference of

opinion as to asthma, caused, I am induced to think, by the influence of locality (nearness or distance from water, etc.)." Dr. Flagg, of St. Paul, observes: "Phthisical patients, having one of these troubles as a complication, not unfrequently undergo some improvement in nutrition and general health during the early part of their residence here, and the throat disorder seems better for a short time, soon to return in all its severity."

Effect of residence in strumous diathesis and phthisis in any of its stages.—There is a decided endorsement of the opinion given in my last report to the Association, that children of this diathesis are benefited by becoming resident here, the earlier in life the better, as are also (though not to the same extent) adults becoming resident before there are any local developments. It is noticed by several who have practised there and here, that there are not so many or severe forms of scrofula as in an equal population in the East.

As to incipient phthisis, including under this head the first marked evidence of tuberculous diseases of the lungs, and excepting those cases in whom, with these symptoms, there is a marked disposition to hæmoptysis, the settled opinion may be stated as follows. Such patients, enabled to come here and live comfortably with body and mind at ease, able to avail themselves of proper exercise out of doors, and to digest their food, and also able to take up their *residence* here, are benefited in the great majority of cases. The effect as a rule in such cases is an *arrest*—not a *cure*, but an arrest—which may be practically final *during residence*, and which in many carefully noted cases has resulted in a cure so far as the *local* disease is concerned. But the caution is given with great unanimity not to *rely* on such a cure so far as to return to the locality where the disease originated, or even to leave this climate. So many cases are on record, in which that change has been speedily followed by rapid redevelopment of the disease, quick decline, and death, that the caution is necessary. The opinion is generally entertained, sustained by facts, that cases prone to frequent inflammatory attacks or to chronic pneumonia do not improve here.

As to well-developed disease, the majority report that residence here by sufferers from abroad is of no benefit, but that the end is so often hastened as to make the change not advisible.

If physicians advising a change of climate for phthisis will take into more frequent and serious consideration the influence of absence from home, friends, accustomed nursing and diet, and the thousand

petty inconveniences, and not infrequent serious exposures, which such change too often implies even for the wealthy, they will be able to prevent great physical and mental suffering, and unnecessary exposure while prolonging the patient's life by allowing him to depart quietly at home. In devotion to *cure*, *prevention* is too often forgotten. In the great majority of cases in the eastern and southern States, a change to this or similar climate for its effect on diathesis or incipient phthisis will be beneficial, but, *as a rule*, *long residence is* necessary to retain the benefits which the change may have afforded.

APPENDIX A.

SAUK CENTRE, MINNESOTA, April 26, 1872.

DEAR SIR: I have not time to give more than an outline of my observation, and experience. The first cases of cerebro-spinal meningitis which occurred were so sudden in their fatal termination, the patient dying within a few hours of the attack, without time even for getting medical assistance, that I can say nothing further about them than merely to state the fact. They were adult young women, two of them single, one married. The first cases that I saw were children, eight of them attacked at about the same time and in the same neighborhood. In all of them the symptoms were nearly identical, pain in the head, along the spine, and in the articulations of the extremities, in some cases, with swelling, heat and redness of the joints. The neck stiff, and the head drawn back (in two cases the occiput resting on the lower cervical vertebræ); the tongue moist, with a white filmy coating (this on one side only in some of them); pulse full, soft, and slower than natural, often irregular or intermittent; respiration irregular; urine scanty, and of the consistence and color of whitewash. Pain intermittent, and, during the intermission, coma, from which the patient could be roused for a moment to answer questions, when he would relapse into the comatose condition. These cases all occurred in a marshy locality, and all my subsequent bad cases, excepting a few to be traced directly to contagion, occurred under the same circumstances. Since its first appearance the disease has gradually changed in its method of attack, often commencing with pain in a joint, the ankle, the knee, the wrist, or in the bowels or chest, but always ending with violent headache and vomiting. Pain in the neck and frequently in the left arm, alternating with the head. The muscular

contractions and opisthotonos were wanting. Often the whole train of symptoms seem wholly inadequate to the actual mischief brewing, and the patient dies suddenly of paralysis. Among the results are paralysis, hemiplegia, loss of hearing, strabismus, and a general dulness of the mental faculties; in a few cases idiocy. In one case, a boy, aged fifteen years, living at my house, the disease began with pain in the knee, followed by inflammation and suppuration of that joint, and of the ankle and shoulder joints, with gangrenous spots wherever any pressure had been made on the skin, or where his limbs touched each other. Death occurred in about twenty days. This boy had been living at home all winter with his family, in extreme poverty, in a very cold, open house, with poor and insufficient food and clothing. The disease attacked him about a week after coming to my house, where his mode of living was entirely and suddenly changed. I may add here, that my dog, a black and tan terrier, took up his quarters upon a buffalo robe which had been used on this boy's bed. He died with all the symptoms of cerebro-spinal meningitis in about a week after.

In the treatment of this disease I am far from boasting of entire success. My cases were all within a circuit of fifteen miles, and (without counting those cases which simulated the complaint, *e. g.* hysteria, etc.) I have treated forty-three well-marked cases of cerebro-spinal meningitis. Of these, I lost seven. In three other cases I had no opportunity to use medical treatment, the patients being in articulo mortis when I saw them. . . . . I know that for eight weeks all my time was taken up among patients with this disease, before a case appeared here, and there have been very few in the village, and they were suddenly fatal. Whatever may be the cause of cerebro-spinal meningitis in other localities, facts seemed to point to a malarious origin here, consequently my treatment has been in that view. The bowels were moved by enemata immediately, followed by calomel in ten or twenty grain doses, with effervescing draughts to allay vomiting. I immediately bathe the feet in warm water, apply mustard plasters to the spine, and after that, dry warmth to the feet and back, which is very grateful to the patient. The animal heat is, in most cases, much below the normal standard. As soon as a remission occurs, I resort to quinine in frequently repeated doses of from three to six grains every three or four hours. Generally, whenever I have been able to introduce a drachm or so before the return of the attack (in the

adult) the next paroxysm has been light, or altogether wanting. In some cases, from the total intermission, I have neglected to enforce the continuance of the quinine, and have been surprised by a terrible recurrence of all the trouble in the third day. Heat, sinapisms, or stimulating applications, such as are at hand in every house, I have found useful. For the pains in the head or elsewhere, morphiæ sulph., in quarter or half grain doses, repeated every hour and a half until relieved. Frequently, I have had astonishingly good results from chloral hydrate in from twenty to forty grain doses, simultaneously with the morphia.

Such is a general outline of treatment with the result of from one-sixteenth to one-nineteenth per cent. of fatality.

Other interesting particulars of individual cases, I am, from want of time, obliged to omit.

Very truly yours,

R. R. PALMER.

RED WING, May 1, 1872.

DEAR DOCTOR: In March, April, May, and June, 1864, cerebro-spinal meningitis was epidemic in this county, sub-epidemic in July and August. When epidemic, over one hundred and fifty well-defined cases were treated. All other diseases, coincident at the time, assumed many of its characteristics.

Symptoms.—They varied greatly. Some patients were stricken down from perfect health; the first evidence being convulsion and coma, death frequently following. In others, a chill succeeded by fever and intense cephalalgia, which symptoms occurred in daily paroxysms or at irregular intervals, a few assuming a tertian type. In others, no evidence was discoverable except slight *malaise* and dulness for four or five days, followed by convulsion, coma, and death. As a rule, however, more or less cephalalgia, soreness of the joints, particularly of the wrists, metacarpal articulation of thumb or great toe, and tenderness of the muscles, preceded the chill. Pressure at cranio-spinal junction caused pain, radiating to the head and face.

During the epidemic there were other nervous functional aberrations, from the lightest to the gravest, and not to be anticipated from the previous history of the case.

Petechiæ were generally present, from the size of flea-bites to purpuritic blotches.

Photophobia, retention of urine, and abdominal pains at times

occurred. In some, a slight chill followed by stupor, from which the patient would recover with violent subsultus, or with paraplegia or deafness, which might be temporary or permanent, and this, too, with very mild antecedents.

Gastric irritability in most cases followed the chill, but was not obstinate or unmanageable. The bowels were generally natural or but slightly costive. The tongue, if changed, was flabby and pale, with a white slimy coating, which became brown and dry if the disease was protracted. Thirst less than natural, appetite impaired or lost. Delirium generally present, at times maniacal, at others mild. Pulse little affected, and scarcely ever tense. Temperature, as a rule, below, rarely above, normal standard. The iris contracted and dilated, at times in the same individual. Strabismus, double vision, and conjunctivitis, with impairment of the senses, frequently noticed.

In a few cases, if a question were asked of a patient no answer would be returned, but a smile, which, as far as muscular adaptation was concerned, was well enough; but the appearance of the eye was that of looking through the questioner to utmost limit of vision. The whole expression of the features was that seen in cases of insidious shock from injuries, more especially severe scalds.

The extreme prostration mentioned by writers did not occur. Convalescence was marked and rapid.

Age.—Chiefly between 1 and 10 years; 10 per cent. between 10 and 25 years; 2 per cent. between 25 and 45 years.

Sex.—Mostly males.

Mortality.—About 10 per cent. Neither locality, occupation, social condition, nor health status appeared to predispose.

Duration.—Extremes, 8 hours to 4 months. Average of recoveries, 6 to 14 days.

Sequelæ.—Paralysis and deafness; recovery from first usual but slow; from last very rare; result, in children, deaf-muteism.

Anatomical characteristics.—Not known; but one post-mortem, and that without definite results.

Etiology.—As an epidemic, governed by the same laws as influence epidemic influenza, but advances more slowly, disappearing and suddenly recurring, having for a cause some peculiar atmospheric condition.

Diagnosis.—In some abrupt cases simulated apoplexy, the initial symptoms of severe exanthemata, or malignant paludal fevers.

During this epidemic, for a brief time, it was mistaken for chorea, hysteria, rheumatism, influenza, and, in a few cases, enteric fever.

Treatment.—Alteratives (mercury, iodine, etc.), antiphlogistics, and bloodletting were useless and hurtful. Cold applications of doubtful utility, except in protracted cases, where they appeared of use. Counter-irritation and friction, as a rule, gave marked relief. Our main reliance was on opium and quinine, given freely at intervals of two and three hours during the intermission. When the periodic character was marked, they scarcely ever failed; and the suspension of their use too soon, frequently involved a recurrence of the disease. A characteristic example in the practice of Dr. A. B. Hawley is given. Boy, aged seven years; fifteen grains quinine daily lessened the violence of the periodic attacks; an increase to thirty grains stopped them—on suspension of the remedy for one week they returned—the quantity of the remedy necessary increased after every relapse, until sixty grains daily effected a cure at the end of four months. The recovery was complete.

A combination of Dover's morphia and camphor was my favorite anodyne, and was freely used when demanded in the disease.

This, with proper attention to the secretions, was our course of treatment.

Yours truly,

WILLIAM W. SWENEY.